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ABSTRACTS
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(Pages refer to the Japanese originals of this volume unless otherwise noticed)

Chemical Studies on Canned Meats. II.—On the Contents of Gases and Metals in Storaged Cans. (pp. 1059～1063): By Yuzuru OKUDA and Kitaro KATAI. (Agricultural Chemical Laboratory, Kyushu Imp. Univ., Fukuoka, Received Aug. 18, 1936.)

The present communication deals with the contents of gases and metals in the commercial cans which have endured long strage. The results of the experiments carried out with canned meats of different ages of storage, from 1 to 15 years, were as follows :–

1) Among gases contained in cans examined, the quantity of nitrogen was the largest in the majority of the cans, but in some old cans the amount of hydrogen was frequently more than that of nitrogen.

2) The proportion of oxygen as compared to that of nitrogen was much smaller than it is in the air.

3) The content of carbon dioxide in cans was larger than that in the air, but it did not increase appreciably during the storage of the cans.

4) Free ammonia and hydrogen sulphide showed only traces.

5) The concentration of hydrogen ion of the canned meats showed almost no change in storage.

6) The contents of iron and tin in both canned beef and fish were nearly proportional to that of hydrogen in the cans which was produced by corrosion of can-materials. But in the case of crab meat packed in the cans which are covered inside with lacquer, almost no increase of the contents of iron, tin and hydrogen was odserved.

7) Unusual increase of hydrogen gas in some very long-stored beef-cans sometimes gave rise to the so called "blown" cans, in which the ends become convex, and are apparently analogous to the spoiled cans dilated by

the pressure of cardon dioxide produced by the action of bacteria upon the contents.

Chemical Studies on Canned Meats. III.—Carbon Dioxide and Hydrogen Gases Produced at Canning and in Storage. (pp. 1064～1068): By Yuzuru OKUDA and Kitaro KATAI. (Agricultural Chemical Laboratory, Kyushu Imp. Univ. Fukuoka, Received Aug. 18, 1936.)

In the present investigation, carbon dioxide was again determined as a means to knowing some of the chemical changes which occured in canned meat, and hydrogen gas to know the state of the corrosion of can-material. But in the present case, instead of commercial cans, sealed glass tubes containing a certain meat, tin and iron powders, and solutions of different hydrogen ion concentration were used for the sake of more exact comparison. The tubes were heated at 130° for different hours, to know the influence of heat and pressure upon canned meat and can-material during canning, and preserved at 50° for different periods to know the effect of storage. The experiments were performed with three kinds of meats with the following results.

1) The production of carbon dioxide during canning increased a little more, as a rule, in the presence of iron than in the presence of tin alone. And also the longer the time of heating the more was the increase.

2) The production of carbon dioxide during storage, gradually increased in the presence of tin alone, but decreased in the presence of iron. The decrease seems to be due to the fact that carbon dioxide produced by gradual oxidation acts on iron to make iron carbonate and hydrogen.

3) The production of carbon dioxide seems to have some relation with the hydrogen ion concentration of meat-juice and the kind of meats, but the relation with the freshness of the meat is not definite.

4) The production of hydrogen is chiefly due to the presence of iron but only slightly to that of tin. In the presence of iron, the production had an intimate relation with the hydrogen ion concentration of meat-juice, the stronger being the concentration the more the production. The production increased proportionally to the length of time of heating in canning, and to the period of storage of cans.

5) The kind and freshness of meats have more or less influence upon the production of hydrogen from can-material.

6) The quantity of carbon dioxide produced was generally very small as compared to that of hydrogen.

On the Iodine in the Poultry Body. (pp. 1069~1076): By Rinziro SASAKI. (Agricultural Chemical Laboratory, Tokio Imperial University, Received Sep. 18, 1936.)

The object of this study was to obtain information on the content of iodine and the effect of supplementary iodine on the content of iodine in the various organs of the poultry body. Two White Leghorn hens and five cocks were fed alternately the basal ration and the experimental ration. The basal ration was consisted of wheat, corn, rice embryo, wheat bran, fish meal and shell, and the experimental ration was made by the addition of potassium iodide 0.1 g (as iodine 76 mg) to 100 g of the basal ration.

The determination of the iodine content was made on lung, liver, kidney, spleen, heart, pancreas, blood, thyroid gland, testicles, oviduct, ovary and egg.

In this work it was found that the content of iodine in the organ and the egg were not constant and influenced by the iodine of the ration, but the influence of the added iodine on each organ was not the same. It was shown that the iodine content of lung, liver, kidney, spleen, ovary and testicles was comparatively more influenced and increased by the addition of iodine to the ration than that of thyroid gland.

The details of this study was reported with the experimental data.

On the Composition of some Lobster-Meats. (pp. 1077~1087): By Kinsuke KONDO, Masanori KUBO and Kazuo BANDO. (Laboratory of the Nutritional Chemistry, Kyoto Imperial University, Received Sept. 21, 1936.)

(1) The writer analysed the fresh meats of three kinds of lobsters separately in sex, which were caught in the Inland Sea of Japan in the spring and in the autumn. He also analysed the canned meat of the shrimp, which was caught in the northern coast of the Hokkaido.

(2) It was shown that the dry matter of the lobster-meat was largely composed of the protein (85~92%).

The contents of the fat, glycogen and ash were very small, but the fluctuation of the amounts of these constituents would play the remarkable role on the characteristic taste of these meats by the season and the fishing place.

(3) The protein of the lobster-meat was hydrolysed and the nitrogen-amounts of the various forms were determined with the following results:

(a) The basic amino acids were more in the meat fished in the spring than in the meat in the autumn. Among others, so were the amounts of arginine, lysine and cystine.

(b) The female meat contained much arginine and lysine than the male, but the content of histidine was in reverse.

(c) The theory on the fluctuation of the bio-protein explained why the amounts of the nitrogen in various forms varied by the season, age, catching place and etc, and estimated that this variation would take part in the discriminate of the taste. (1936, August 31)

The Composition of the Bonito-Meat and some Characters of the Proteins of Bonito-Meat (Katsuwonus pelamis (L.)) (pp. 1088 ~1098): By Kinsuke KONDO and Torao MIHARA. (Laboratory of the Nutritional Chemistry, Kyoto Imperial University, Received Sept. 21, 1936.)

(1) The meat of the bonito-fishes, which were fished in two different provinces of Japan, were analysed with the following results:

(a) The edible part of the body of the bonito-fish was about 46~47 % by weight and it amounted to about 55% together with the blood red meat.

(b) The stomach intestines, which are used for the preparation of the special tasteful food, was about 25% to the total body by weight.

(c) The meat was composed principally with about 70% of the water and about 23% of the protein and contained about 126 Cals. of the available energy per 100 g of the fresh meat. So the lower content of the water and the higher content of the protein were to be considered as one of the characters of the bonito-meat.

(d) The stomach and intestines contained water much less than the meat, but large amount of fat.

(2) It was demonstrated that the protein of the bonito-meat was constructed with many kinds of protein which were soluble in water and in saline solution in various concentrations.

(3) The water soluble protein and dilute alkali soluble protein were isolated, the former was about 25% and the latter about 50% to the total meat-protein.

(4) The isolated protein was hydrolysed and the nitrogen-distribution was determined with the following results:

(a) The dilute alkali soluble protein group contained more diamino acids than the water soluble protein group.

(b) The diamino acid was composed with remarkably large amount of histidine.

(c) Considering this fact, the writer assumed that the histidine would play the principal role in the fine taste of the dried bonito, which are used for flavouring material in Japanese cooking.

(5) The isoelectric points of the isolated proteins were determined and explained the practical meaning of the isoelectric point of the protein of the bonito-meat. (1936, September 10)

Studies on the Composition of Meat of the Flat Fishes (Pseudorhombus cinnamomeus (T. & S.)) (pp. 1099～1105): By Kinsuke KONDO, Kazuo FUJIOKA, Sakae SHINANO, and Hisateru MITSUDA. (Laboratory of the Nutritional Chemistry, Kyoto Imperial University. Received Sept. 21, 1936.)

One kind of flat fishes, which is called Ganzo-Hirame, fishing four times at some interval in the southern sea of Corea, was analysed to see the fluctuation of the compositions due to the seasonal and sexual change. The results are as follows:

(1) The edible part of the body of the flat fish was about 51～53% by weight.

(2) The amount of spawn or milt was only about 1% and the amount of liver was fluctuating from 1 to 5% to the body weight.

(3) The analytical results could not explain the source of the characteristic taste in respect to the sex and season, but showed the following facts:

(a) The compositions of the flat fish were as follows:

Water: 71～80%.
Protein: about 20%.
Fat: 0.6～5.07%.
Ash: about 1.2%.

(b) The amount of the protein fluctuated reciprocally against the amount of water and fat.

(c) The available energy per 100 g of the fresh meat was 80～130 Cals.

(4) The meat proteins of the flat fish were prepared and the amount of the various nitrogen-forms were determined. And we could find the sexual difference only in the amount of lysine, but we could estimate that the fluctuations of the components of proteins, fats, and minerals would produce the characteristic taste which was due to the season or the fishing place.

Biochemical Studies on "Sotetsu" (Cycas revoluta Thunb.) Part VI.—On the Poison-Removal of the "Sotetsu"-seed and its Nutritive Value. (pp. 1106～1116): By Kotaro NISHIDA. (Agricultural Chemical Laboratory, Kagoshima Agricultural College, Received Sept. 4, 1936.)

Biochemical Studies of the Pollen. (pp. 1117～1119): By Chikafumi ICHIKAWA. (The Soma Agricultural and Sericultural School, Received Sept. 15, 1936.)

Utilization of irradiated Mycelium of Aspergillus Oryzae for Poultry Feeding (II).—Effect on the laying Hen. (pp. 1120～1124): By Ryohei TAKATA, Kisaburo YOKOYAMA and Goichiro KATSUI. (Osaka Imp. Univ., Received Sept. 10, 1936.)

Chemical Studies on Silk Fibroin, III.—Dyeing Properties of Fibroin Components. (pp. 1125～1131): By Hideo KANEKO and Chuichiro KOMATSU. (Imperial College of Sericulture and Silk-Industry, Received Aug. 24, 1936.)

As silk fibroin fibre is basiphil, it is easily dyed with basic dyestuffs; in other word, it is considered as electro-negative protein. But, by the strong degumming or chemical damage with alkali etc. it can be mainly dyed with acid dyestuffs.

Fibroin components (A, B, B_{II}, B_{III}), separated by fractional precipitation with ammonium sulphate, have marked different dyeing properties for basic and acid dyestuffs. Fibroin B components are generally stained by basic colours as the whole fibroin fibre, but fibroin A component, fiberous fraction, stained mostly by acid colours. With mixed dyestuffs the difference of dyeing affinity for these components is clear and distinct.

From the results shown by the X-ray diagram, crystallites in natural silk fibre are oriented parallel with the fibre axis. These crystallites may be probably composed of A component and part of B components, B_{III}. The other B components (B_{I}, B_{II}) which are resemble their dyeing properties with silk fibroin fibre may exist as cementing micelles for the former oriented crystallites. As characteristic of wild silk fibroins they contain considerably more fibroin A, electro-positive component and less fibroin B, electro-negative component than the cultivated silk. These difference of their components may lead probably to different tensile strength, elasticity, resiliency, pliability etc..

Studies on the Existence of Carboligase. (pp. 1132～1140): Yukio TOMIYASU. (Agricultural Chemical Laboratory, Kyushu Imperial University, Received Sept. 10, 1936.)